

CLAIMS

What is claimed is :

1. A power conversion apparatus for a non-linear load, comprising:
5 a pair of input terminals for connection to a DC voltage source;
a first and a second capacitor connected in series coupled to said pair of input terminals;
a first and a second diode coupled in parallel with said first and second capacitors respectively such that the diodes are reverse biased under said DC voltage source;
10 an inductor coupled to a first node connecting said capacitors and diodes;
a transformer comprising at least one primary winding and two secondary windings, said transformer having its primary winding coupled to said inductor and its secondary windings coupled in series at a second node, said secondary windings being constructed in a way to produce voltages with opposite polarities with respect to said second node coupling
15 these two windings;
a third terminal coupled to said primary winding of said transformer, for connection to a pulsating voltage source, such voltage source charging or discharging said first and second capacitors within one pulsating cycle; and
a non-linear load coupled to said secondary windings for electrical power.
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2. A power conversion apparatus for a non-linear load, comprising:
a pair of input terminals for connection to a DC voltage source;
a first and a second capacitor connected in series coupled to said pair of input terminals;
25 a first and a second diode coupled in parallel with said first and second capacitors respectively such that the diodes are reverse biased under said DC voltage source;
a first node connecting said capacitors and diodes;
a transformer comprising at least one primary winding and two secondary windings, said transformer having its primary winding coupled to said first node and its secondary
30 windings coupled in series at a second node, said secondary windings being constructed in a way to produce voltages with opposite polarities with respect to said second node coupling these two windings;

a third terminal coupled to said primary winding of said transformer, for connection to a pulsating voltage source, such voltage source charging or discharging said first and second capacitors within one pulsating cycle; and

a non-linear load coupled to said secondary windings for electrical power.

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3. A power conversion apparatus for a non-linear load, comprising:

a pair of input terminals for connection to a DC voltage source;

a first and a second diode connected in series and coupled to said DC voltage source such that each diode is reverse biased under said DC voltage source;

10 a first capacitor connected in parallel to either of the said diodes;

an inductor coupled to a first node connecting said diodes;

a transformer comprising at least one primary winding and two secondary windings, said transformer having its primary winding coupled to said inductor and its secondary windings coupled in series at a second node, said secondary windings being constructed in a way to produce voltages with opposite polarities with respect to said second node coupling these two windings;

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a third terminal coupled to said primary winding of said transformer, for connection to a pulsating voltage source, such voltage source charging or discharging said first and second capacitors within one pulsating cycle; and

20 a non-linear load coupled to said secondary windings for electrical power.

4. The apparatus according to claim 1 further comprising means to couple said node joining said transformer secondary windings to one of the said input terminals.

25 5. The apparatus according to claim 2 further comprising means to couple said node joining said transformer secondary windings to one of the said input terminals.

6. The apparatus according to claim 3 further comprising means to couple said node joining said transformer secondary windings to one of the said input terminals.

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7. The apparatus according to claim 1 having a discharge lamp as said non-linear load, further comprising a capacitor at said lamp load terminals to facilitate lamp operations.

8. The apparatus according to claim 2 having a discharge lamp as said non-linear load, further comprising a capacitor at said lamp load terminals to facilitate lamp operations.

5 9. The apparatus according to claim 3 having a discharge lamp as said non-linear load, further comprising a capacitor at said lamp load terminals to facilitate lamp operations.

10 10. The apparatus according to claim 1 having a discharge lamp as said non-linear load, further comprising:

two series capacitors at said lamp load terminals to facilitate lamp operations;

a node coupling said two series capacitors; and

means to couple said node to one of said input terminals.

15 11. The apparatus according to claim 2 having a discharge lamp as said non-linear load, further comprising:

two series capacitors at said lamp load terminals to facilitate lamp operations;

a node coupling said two series capacitors; and

means to couple said node to one of said input terminals.

20 12. The apparatus according to claim 3 having a discharge lamp as said non-linear load, further comprising:

two series capacitors at said lamp load terminals to facilitate lamp operations;

a node coupling said two series capacitors; and

25 means to couple said node to one of said input terminals.

13. The apparatus according to claim 1, further comprising:
means for controlling the frequency of said pulsating voltage source coupled to said third terminal for control of output power.

30 14. The apparatus according to claim 2, further comprising:

means for controlling the frequency of said pulsating voltage source coupled to said third terminal for control of output power.

15. The apparatus according to claim 3, further comprising:

5 means for controlling the frequency of said pulsating voltage source coupled to said third terminal for control of output power.

16. A power conversion apparatus, comprising:

10 a rectifier module for connection to an AC source and having a pair of output terminals which deliver a direct current;

a pair of series switches coupled to said pair of rectifier module output terminals for acceptance of said direct current, switching of said switches produces a pulsating DC source at a first node;

15 means for coupling said first node with pulsating DC to the third terminals in the apparatus according to claim 1; and

means for coupling the output terminals of said rectifier module to the input terminals in the apparatus according to claim 1.

17. A power conversion apparatus, comprising:

20 a rectifier module for connection to an AC source and having a pair of output terminals which deliver a direct current;

a pair of series switches coupled to said pair of rectifier module output terminals for acceptance of said direct current, switching of said switches produces a pulsating DC source at a first node;

25 means for coupling said first node with pulsating DC to the third terminals in the apparatus according to claim 2; and

means for coupling the output terminals of said rectifier module to the input terminals in the apparatus according to claim 2.

18. A power conversion apparatus, comprising:

30 a rectifier module for connection to an AC source and having a pair of output terminals which deliver a direct current;

a pair of series switches coupled to said pair of rectifier module output terminals for acceptance of said direct current, switching of said switches produces a pulsating DC source at a first node;

5 means for coupling said first node with pulsating DC to the third terminals in the apparatus according to claim 3; and

means for coupling the output terminals of said rectifier module to the input terminals in the apparatus according to claim 3.